

A New Parking-Space Detection System

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Abstract

Parking in crowded areas can cause serious expenses. When finding a place to park a car, many drivers need to spend a significant amount of time, effort and fuel. Although today there are many solutions to indicate whether parking places are free. Nevertheless, they are mostly suitable for parking lots inside buildings such as shopping centers. However, there are not many solutions for exterior parking lots. But with recent improvements in Internet of Things and related technologies there are many possibilities how to solve this problem. Novel communication protocols, for example ZigBee or Bluetooth Low Energy that can be used to create a network of sensors to monitor parking spaces. There are also many cheap microcomputers and microcontrollers that can be used to read and process data from sensors. The purpose of this work is to propose a solution to this problem, especially by taking into account problems like power consumption, and a way of communication.

I have designed and implemented a prototype of a system for free parking space detection using Arduino with a Bluetooth Low Energy shield. The data about parking spaces are then sent to Raspberry Pi through Bluetooth Low Energy. Raspberry Pi then processes these data and sends them to Backendless cloud server. A driver can use an Android application that uses the data from the server to search for free parking spaces.

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